

Claims

1. A method of fabricating a radiation-emitting semiconductor chip based on AlGaInP, comprising the method steps of:
 - 5 - preparing a substrate (12);
 - applying to said substrate a semiconductor layer sequence comprising a photon-emitting active layer (22); and
 - applying a transparent decoupling layer (16),
characterized in that
 - 10 - said substrate (12) is formed substantially of germanium and
 - said transparent decoupling layer (16) is applied in a temperature range extending no higher than 800°C.
2. The method as described in claim 1,
 - 15 characterized in that
 - said transparent decoupling layer (16) is applied with the use of tertiary butyl phosphine as a phosphorus source.
3. The method as described in claim 1 or 2,
 - 20 characterized in that
 - said transparent decoupling layer (16) is applied at a temperature below 780°C, preferably below 750°C.
4. The method as described in one of the preceding claims,
 - 25 characterized in that
 - said transparent decoupling layer (16) is applied at a temperature of about 700°C.
5. The method as described in one of the preceding claims,
 - characterized in that
 - 30 said transparent decoupling layer (16) is applied with the use of trimethyl gallium as a gallium source.
6. The method as described in one of the preceding claims,
 - characterized in that
 - 35 said transparent decoupling layer (16) is grown by organometallic vapor-phase epitaxy (OMVPE).

7. The method as described in at least one of claims 2 to 6,
characterized in that
said decoupling layer comprises $\text{Ga}_x(\text{In}_y\text{Al}_{1-y})_{1-x}\text{P}$ wherein $0.8 \leq x$ and $0 \leq y \leq 1$, particularly GaP.
- 5 8. The method as described in claim 6 or 7,
characterized in that
said transparent decoupling layer (16) is grown with a V:III ratio of 5 to 20, preferably of about 10.
9. A radiation-emitting semiconductor chip based on AlGaInPm comprising
10 - a substrate (12);
- a semiconductor layer sequence (14) applied to said substrate and comprising a photon-emitting
active layer (22); and
- a transparent decoupling layer (16) disposed on said semiconductor layer sequence (14),
characterized in that
15 - said substrate (12) is formed of germanium.
10. The radiation-emitting semiconductor chip as described in claim 9,
characterized in that
said transparent decoupling layer (16) comprises
20 $\text{Ga}_x(\text{In}_y\text{Al}_{1-y})_{1-x}\text{P}$ wherein $0.8 \leq x$ and $0 \leq y \leq 1$, particularly GaP.
11. The radiation-emitting semiconductor chip as described in at least one of claims 9 and 10,
characterized in that
said transparent decoupling layer (16) has a thickness of between about 1 μm and about 10 μm ,
25 particularly of between about 2 μm and about 10 μm .